



SEQUENCE LISTING

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Li, Rui
Xiong, Jian-Ping

<120> HIGH AFFINITY INTEGRIN POLYPEPTIDES AND USES THEREOF

<130> 00786-536001

<140> US 09/805,354

<141> 2001-03-13

<150> US 09/758,493

<151> 2001-01-11

<150> US 60/221,950

<151> 2000-07-31

<160> 20

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 191

<212> PRT

<213> Homo sapiens

<400> 1

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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Cys | Pro | Gln | Glu | Asp | Ser | Asp | Ile | Ala | Phe | Leu | Ile | Asp | Gly | Ser | Gly |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | |
| Ser | Ile | Ile | Pro | His | Asp | Phe | Arg | Arg | Met | Lys | Glu | Phe | Val | Ser | Thr |
| | | | 20 | | | | | 25 | | | | | 30 | | |
| Val | Met | Glu | Gln | Leu | Lys | Lys | Ser | Lys | Thr | Leu | Phe | Ser | Leu | Met | Gln |
| | | 35 | | | | | 40 | | | | | 45 | | | |
| Tyr | Ser | Glu | Glu | Phe | Arg | Ile | His | Phe | Thr | Phe | Lys | Glu | Phe | Gln | Asn |
| | 50 | | | | | 55 | | | | 60 | | | | | |
| Asn | Pro | Asn | Pro | Arg | Ser | Leu | Val | Lys | Pro | Ile | Thr | Gln | Leu | Leu | Gly |
| | 65 | | | | 70 | | | | | 75 | | | | 80 | |
| Arg | Thr | His | Thr | Ala | Thr | Gly | Ile | Arg | Lys | Val | Val | Arg | Glu | Leu | Phe |
| | | | | 85 | | | | 90 | | | | | 95 | | |
| Asn | Ile | Thr | Asn | Gly | Ala | Arg | Lys | Asn | Ala | Phe | Lys | Ile | Leu | Val | Val |
| | | | 100 | | | | 105 | | | | | | 110 | | |
| Ile | Thr | Asp | Gly | Glu | Lys | Phe | Gly | Asp | Pro | Leu | Gly | Tyr | Glu | Asp | Val |
| | | 115 | | | | | 120 | | | | | 125 | | | |
| Ile | Pro | Glu | Ala | Asp | Arg | Glu | Gly | Val | Ile | Arg | Tyr | Val | Ile | Gly | Val |
| | 130 | | | | | 135 | | | | 140 | | | | | |
| Gly | Asp | Ala | Phe | Arg | Ser | Glu | Lys | Ser | Arg | Gln | Glu | Leu | Asn | Thr | Ile |
| | 145 | | | | 150 | | | | 155 | | | | | 160 | |
| Ala | Ser | Lys | Pro | Pro | Arg | Asp | His | Val | Phe | Gln | Val | Asn | Asn | Phe | Glu |
| | | | | 165 | | | | 170 | | | | | 175 | | |
| Ala | Leu | Lys | Thr | Ile | Gln | Asn | Gln | Leu | Arg | Glu | Lys | Ile | Phe | Ala | |
| | | | 180 | | | | | 185 | | | | | 190 | | |

<210> 2

<211> 191

<212> PRT

<213> Homo sapiens

<400> 2

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Cys Pro Arg Gln Glu Gln Asp Ile Val Phe Leu Ile Asp Gly Ser Gly
 1           5           10           15
Ser Ile Ser Ser Arg Asn Phe Ala Thr Met Met Asn Phe Val Arg Ala
           20           25           30
Val Ile Ser Gln Phe Gln Arg Pro Ser Thr Gln Phe Ser Leu Met Gln
           35           40           45
Phe Ser Asn Lys Phe Gln Thr His Phe Thr Phe Glu Glu Phe Arg Arg
           50           55           60
Thr Ser Asn Pro Leu Ser Leu Leu Ala Ser Val His Gln Leu Gln Gly
           65           70           75           80
Phe Thr Tyr Thr Ala Thr Ala Ile Gln Asn Val Val His Arg Leu Phe
           85           90           95
His Ala Ser Tyr Gly Ala Arg Arg Asp Ala Thr Lys Ile Leu Ile Val
           100          105          110
Ile Thr Asp Gly Lys Lys Glu Gly Asp Ser Leu Asp Tyr Lys Asp Val
           115          120          125
Ile Pro Met Ala Asp Ala Ala Gly Ile Ile Arg Tyr Ala Ile Gly Val
           130          135          140
Gly Leu Ala Phe Gln Asn Arg Asn Ser Trp Lys Glu Leu Asn Asp Ile
           145          150          155          160
Ala Ser Lys Pro Ser Gln Glu His Ile Phe Lys Val Glu Asp Phe Asp
           165          170          175
Ala Leu Lys Asp Ile Gln Asn Gln Leu Lys Glu Lys Ile Phe Ala
           180          185          190

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<210> 3

<211> 191

<212> PRT

<213> Homo sapiens

<400> 3

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Cys Pro His Gln Glu Met Asp Ile Val Phe Leu Ile Asp Gly Ser Gly
 1           5           10           15
Ser Ile Asp Gln Asn Asp Phe Asn Gln Met Lys Gly Phe Val Gln Ala
           20           25           30
Val Met Gly Gln Phe Glu Gly Thr Asp Thr Leu Phe Ala Leu Met Gln
           35           40           45
Tyr Ser Asn Leu Leu Lys Ile His Phe Thr Phe Thr Gln Phe Arg Thr
           50           55           60
Ser Pro Ser Gln Gln Ser Leu Val Asp Pro Ile Val Gln Leu Lys Gly
           65           70           75           80
Leu Thr Phe Thr Ala Thr Gly Ile Leu Thr Val Val Thr Gln Leu Phe
           85           90           95
His His Lys Asn Gly Ala Arg Lys Ser Ala Lys Lys Ile Leu Ile Val
           100          105          110
Ile Thr Asp Gly Gln Lys Tyr Lys Asp Pro Leu Glu Tyr Ser Asp Val
           115          120          125
Ile Pro Gln Ala Glu Lys Ala Gly Ile Ile Arg Tyr Ala Ile Gly Val
           130          135          140
Gly His Ala Phe Gln Gly Pro Thr Ala Arg Gln Glu Leu Asn Thr Ile
           145          150          155          160
Ser Ser Ala Pro Pro Gln Asp His Val Phe Lys Val Asp Asn Phe Ala
           165          170          175

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Ala Leu Gly Ser Ile Gln Lys Gln Leu Gln Glu Lys Ile Tyr Ala
 180 185 190

<210> 4
 <211> 184
 <212> PRT
 <213> Homo sapiens

<400> 4
 Cys Ile Lys Gly Asn Val Asp Leu Val Phe Leu Phe Asp Gly Ser Met
 1 5 10 15
 Ser Leu Gln Pro Asp Glu Phe Gln Lys Ile Leu Asp Phe Met Lys Asp
 20 25 30
 Val Met Lys Lys Leu Ser Asn Thr Ser Tyr Gln Phe Ala Ala Val Gln
 35 40 45
 Phe Ser Thr Ser Tyr Lys Thr Glu Phe Asp Phe Ser Asp Tyr Val Lys
 50 55 60
 Trp Lys Asp Pro Asp Ala Leu Leu Lys His Val Lys His Met Leu Leu
 65 70 75 80
 Leu Thr Asn Thr Phe Gly Ala Ile Asn Tyr Val Ala Thr Glu Val Phe
 85 90 95
 Arg Glu Glu Leu Gly Ala Arg Pro Asp Ala Thr Lys Val Leu Ile Ile
 100 105 110
 Ile Thr Asp Gly Glu Ala Thr Asp Ser Gly Asn Ile Asp Ala Ala Lys
 115 120 125
 Asp Ile Ile Arg Tyr Ile Ile Gly Ile Gly Lys His Phe Gln Thr Lys
 130 135 140
 Glu Ser Gln Glu Thr Leu His Lys Phe Ala Ser Lys Pro Ala Ser Glu
 145 150 155 160
 Phe Val Lys Ile Leu Asp Thr Phe Glu Lys Leu Lys Asp Leu Phe Thr
 165 170 175
 Glu Leu Gln Lys Lys Ile Tyr Val
 180

<210> 5
 <211> 195
 <212> PRT
 <213> Homo sapiens

<400> 5
 Cys Ser Thr Gln Leu Asp Ile Val Ile Val Leu Asp Gly Ser Asn Ser
 1 5 10 15
 Ile Tyr Pro Trp Asp Ser Val Thr Ala Phe Leu Asn Asp Leu Leu Lys
 20 25 30
 Arg Met Asp Ile Gly Pro Lys Gln Thr Gln Val Gly Ile Val Gln Tyr
 35 40 45
 Gly Glu Asn Val Thr His Glu Phe Asn Leu Asn Lys Tyr Ser Ser Thr
 50 55 60
 Glu Glu Val Leu Val Ala Ala Lys Lys Ile Val Gln Arg Gly Gly Arg
 65 70 75 80
 Gln Thr Met Thr Ala Leu Gly Thr Asp Thr Ala Arg Lys Glu Ala Phe
 85 90 95
 Thr Glu Ala Arg Gly Ala Arg Arg Gly Val Lys Lys Val Met Val Ile
 100 105 110
 Val Thr Asp Gly Glu Ser His Asp Asn His Arg Leu Lys Lys Val Ile
 115 120 125

Gln Asp Cys Glu Asp Glu Asn Ile Gln Arg Phe Ser Ile Ala Ile Leu
 130 135 140
 Gly Ser Tyr Asn Arg Gly Asn Leu Ser Thr Glu Lys Phe Val Glu Glu
 145 150 155 160
 Ile Lys Ser Ile Ala Ser Glu Pro Thr Glu Lys His Phe Phe Asn Val
 165 170 175
 Ser Asp Glu Leu Ala Leu Val Thr Ile Val Lys Thr Leu Gly Glu Arg
 180 185 190
 Ile Phe Ala
 195

<210> 6
 <211> 195
 <212> PRT
 <213> Homo sapiens

<400> 6
 Cys Pro Ser Leu Ile Asp Val Val Val Val Cys Asp Glu Ser Asn Ser
 1 5 10 15
 Ile Tyr Pro Trp Asp Ala Val Lys Asn Phe Leu Glu Lys Phe Val Gln
 20 25 30
 Gly Leu Asp Ile Gly Pro Thr Lys Thr Gln Val Gly Leu Ile Gln Tyr
 35 40 45
 Ala Asn Asn Pro Arg Val Val Phe Asn Leu Asn Thr Tyr Lys Thr Lys
 50 55 60
 Glu Glu Met Ile Val Ala Thr Ser Gln Thr Ser Gln Tyr Gly Gly Asp
 65 70 75 80
 Leu Thr Asn Thr Phe Gly Ala Ile Gln Tyr Ala Arg Lys Tyr Ala Tyr
 85 90 95
 Ser Ala Ala Ser Gly Gly Arg Arg Ser Ala Thr Lys Val Met Val Val
 100 105 110
 Val Thr Asp Gly Glu Ser His Asp Gly Ser Met Leu Lys Ala Val Ile
 115 120 125
 Asp Gln Cys Asn His Asp Asn Ile Leu Arg Phe Gly Ile Ala Val Leu
 130 135 140
 Gly Tyr Leu Asn Arg Asn Ala Leu Asp Thr Lys Asn Leu Ile Lys Glu
 145 150 155 160
 Ile Lys Ala Ile Ala Ser Ile Pro Thr Glu Arg Tyr Phe Phe Asn Val
 165 170 175
 Ser Asp Glu Ala Ala Leu Leu Glu Lys Ala Gly Thr Leu Gly Glu Gln
 180 185 190
 Ile Phe Ser
 195

<210> 7
 <211> 195
 <212> PRT
 <213> Homo sapiens

<400> 7
 Cys Pro Thr Tyr Met Asp Val Val Ile Val Leu Asp Gly Ser Asn Ser
 1 5 10 15
 Ile Tyr Pro Trp Ser Glu Val Gln Thr Phe Leu Arg Arg Leu Val Gly
 20 25 30
 Lys Leu Phe Ile Asp Pro Glu Gln Ile Gln Val Gly Leu Val Gln Tyr
 35 40 45

Gly Glu Ser Pro Val His Glu Trp Ser Leu Gly Asp Phe Arg Thr Lys
 50 55 60
 Glu Glu Val Val Arg Ala Ala Lys Asn Leu Ser Arg Arg Glu Gly Arg
 65 70 75 80
 Glu Thr Lys Thr Ala Gln Ala Ile Met Val Ala Cys Thr Glu Gly Phe
 85 90 95
 Ser Gln Ser His Gly Gly Arg Pro Glu Ala Ala Arg Leu Leu Val Val
 100 105 110
 Val Thr Asp Gly Glu Ser His Asp Gly Glu Glu Leu Pro Ala Ala Leu
 115 120 125
 Lys Ala Cys Glu Ala Gly Arg Val Thr Arg Tyr Gly Ile Ala Val Leu
 130 135 140
 Gly His Tyr Leu Arg Arg Gln Arg Asp Pro Ser Ser Phe Leu Arg Glu
 145 150 155 160
 Ile Arg Thr Ile Ala Ser Asp Pro Asp Glu Arg Phe Phe Phe Asn Val
 165 170 175
 Thr Asp Glu Ala Ala Leu Thr Asp Ile Val Asp Ala Leu Gly Asp Arg
 180 185 190
 Ile Phe Gly
 195

<210> 8

<211> 193

<212> PRT

<213> Homo sapiens

<400> 8

Cys Gln Thr Tyr Met Asp Ile Val Ile Val Leu Asp Gly Ser Asn Ser
 1 5 10 15
 Ile Tyr Pro Trp Val Glu Val Gln His Phe Leu Ile Asn Ile Leu Lys
 20 25 30
 Lys Phe Tyr Ile Gly Pro Gly Gln Ile Gln Val Gly Val Val Gln Tyr
 35 40 45
 Gly Glu Asp Val Val His Glu Phe His Leu Asn Asp Tyr Arg Ser Val
 50 55 60
 Lys Asp Val Val Glu Ala Ala Ser His Ile Glu Gln Arg Gly Gly Thr
 65 70 75 80
 Glu Thr Arg Thr Ala Phe Gly Ile Glu Phe Ala Arg Ser Glu Ala Phe
 85 90 95
 Gln Lys Gly Gly Arg Lys Gly Ala Lys Lys Val Met Ile Val Ile Thr
 100 105 110
 Asp Gly Glu Ser His Asp Ser Pro Asp Leu Glu Lys Val Ile Gln Gln
 115 120 125
 Ser Glu Arg Asp Asn Val Thr Arg Tyr Ala Val Ala Val Leu Gly Tyr
 130 135 140
 Tyr Asn Arg Arg Gly Ile Asn Pro Glu Thr Phe Leu Asn Glu Ile Lys
 145 150 155 160
 Tyr Ile Ala Ser Asp Pro Asp Asp Lys His Phe Phe Asn Val Thr Asp
 165 170 175
 Glu Ala Ala Leu Lys Asp Ile Val Asp Ala Leu Gly Asp Arg Ile Phe
 180 185 190
 Ser

<210> 9

<211> 192

<212> PRT

<213> Homo sapiens

<400> 9

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Glu Glu Ala Gly Thr Glu Ile Ala Ile Ile Leu Asp Gly Ser Gly Ser
 1           5           10           15
Ile Asp Pro Pro Asp Phe Gln Arg Ala Lys Asp Phe Ile Ser Asn Met
           20           25           30
Met Arg Asn Phe Tyr Glu Lys Cys Phe Glu Cys Asn Phe Ala Leu Val
           35           40           45
Gln Tyr Gly Gly Val Ile Gln Thr Glu Phe Asp Leu Arg Asp Ser Gln
           50           55           60
Asp Val Met Ala Ser Leu Ala Arg Val Gln Asn Ile Thr Gln Val Gly
           65           70           75           80
Ser Val Thr Lys Thr Ala Ser Ala Met Gln His Val Leu Asp Ser Ile
           85           90           95
Phe Thr Ser Ser His Gly Ser Arg Arg Lys Ala Ser Lys Val Met Val
           100          105          110
Val Leu Thr Asp Gly Gly Ile Phe Glu Asp Pro Leu Asn Leu Thr Thr
           115          120          125
Val Ile Asn Ser Pro Lys Met Gln Gly Val Glu Arg Phe Ala Ile Gly
           130          135          140
Val Gly Glu Glu Phe Lys Ser Ala Arg Thr Ala Arg Glu Leu Asn Leu
           145          150          155          160
Ile Ala Ser Asp Pro Asp Glu Thr His Ala Phe Lys Val Thr Asn Tyr
           165          170          175
Met Ala Leu Asp Gly Leu Leu Ser Lys Leu Arg Tyr Asn Ile Ile Ser
           180          185          190

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<210> 10

<211> 244

<212> PRT

<213> Homo sapiens

<400> 10

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Tyr Pro Val Asp Ile Tyr Tyr Leu Met Asp Leu Ser Tyr Ser Met Lys
 1           5           10           15
Asp Asp Leu Trp Ser Ile Gln Asn Leu Gly Thr Lys Leu Ala Thr Gln
           20           25           30
Met Arg Lys Leu Thr Ser Asn Leu Arg Ile Gly Phe Gly Ala Phe Val
           35           40           45
Asp Lys Pro Val Ser Pro Tyr Met Tyr Ile Ser Pro Pro Glu Ala Leu
           50           55           60
Glu Asn Pro Cys Tyr Asp Met Lys Thr Thr Cys Leu Pro Met Phe Gly
           65           70           75           80
Tyr Lys His Val Leu Thr Leu Thr Asp Gln Val Thr Arg Phe Asn Glu
           85           90           95
Glu Val Lys Lys Gln Ser Val Ser Arg Asn Arg Asp Ala Pro Glu Gly
           100          105          110
Gly Phe Asp Ala Ile Met Gln Ala Thr Val Cys Asp Glu Lys Ile Gly
           115          120          125
Trp Arg Asn Asp Ala Ser His Leu Leu Val Phe Thr Thr Asp Ala Lys
           130          135          140
Thr His Ile Ala Leu Asp Gly Arg Leu Ala Gly Ile Val Gln Pro Asn
           145          150          155          160
Asp Gly Gln Cys His Val Gly Ser Asp Asn His Tyr Ser Ala Ser Thr
           165          170          175

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Thr Met Asp Tyr Pro Ser Leu Gly Leu Met Thr Glu Lys Leu Ser Gln
      180                      185                      190
Lys Asn Ile Asn Leu Ile Phe Ala Val Thr Glu Asn Val Val Asn Leu
      195                      200                      205
Tyr Gln Asn Tyr Ser Glu Leu Ile Pro Gly Thr Thr Val Gly Val Leu
      210                      215                      220
Ser Met Asp Ser Ser Asn Val Leu Gln Leu Ile Val Asp Ala Tyr Gly
225                      230                      235                      240
Lys Ile Arg Ser

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<210> 11
<211> 245
<212> PRT
<213> Homo sapiens

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```

<400> 11
Tyr Pro Val Asp Leu Tyr Tyr Leu Met Asp Leu Ser Leu Ser Met Lys
  1                      5                      10                      15
Asp Asp Leu Asp Asn Ile Arg Ser Leu Gly Thr Lys Leu Ala Glu Glu
      20                      25                      30
Met Arg Lys Leu Thr Ser Asn Phe Arg Leu Gly Phe Gly Ser Phe Val
      35                      40                      45
Asp Lys Asp Ile Ser Pro Phe Ser Tyr Thr Ala Pro Arg Tyr Gln Thr
      50                      55                      60
Asn Pro Cys Ile Gly Tyr Lys Leu Phe Pro Asn Cys Val Pro Ser Phe
      65                      70                      75                      80
Gly Phe Arg His Leu Leu Pro Leu Thr Asp Arg Val Asp Ser Phe Asn
      85                      90                      95
Glu Glu Val Arg Lys Gln Arg Val Ser Arg Asn Arg Asp Ala Pro Glu
      100                      105                      110
Gly Gly Phe Asp Ala Val Leu Gln Ala Ala Val Cys Lys Glu Lys Ile
      115                      120                      125
Gly Trp Arg Lys Asp Ala Leu His Leu Leu Val Phe Thr Thr Asp Asp
      130                      135                      140
Val Pro His Ile Ala Leu Asp Gly Lys Leu Gly Gly Leu Val Gln Pro
      145                      150                      155                      160
His Asp Gly Gln Cys His Leu Asn Glu Ala Asn Glu Tyr Thr Ala Ser
      165                      170                      175
Asn Gln Met Asp Tyr Pro Ser Leu Ala Leu Leu Gly Glu Lys Leu Ala
      180                      185                      190
Glu Asn Asn Ile Asn Leu Ile Phe Ala Val Thr Lys Asn His Tyr Met
      195                      200                      205
Leu Tyr Lys Asn Phe Thr Ala Leu Ile Pro Gly Thr Thr Val Glu Ile
      210                      215                      220
Leu Asp Gly Asp Ser Lys Asn Ile Ile Gln Leu Ile Ile Asn Ala Tyr
225                      230                      235                      240
Asn Ser Ile Arg Ser
      245

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<210> 12
<211> 243
<212> PRT
<213> Homo sapiens

```

<400> 12

```

Tyr Pro Val Asp Leu Tyr Tyr Leu Met Asp Leu Ser Ala Ser Met Asp
 1          5          10          15
Asp Asp Leu Asn Thr Ile Lys Glu Leu Gly Ser Arg Leu Ser Lys Glu
          20          25          30
Met Ser Lys Leu Thr Ser Asn Phe Arg Leu Gly Phe Gly Ser Phe Val
          35          40          45
Glu Lys Pro Val Ser Pro Phe Val Lys Thr Thr Pro Glu Glu Ile Ala
          50          55          60
Asn Pro Cys Ser Ser Ile Pro Tyr Phe Cys Leu Pro Thr Phe Gly Phe
          65          70          75          80
Lys His Ile Leu Pro Leu Thr Asn Asp Ala Glu Arg Phe Asn Glu Ile
          85          90          95
Val Lys Asn Gln Lys Ile Ser Ala Asn Ile Asp Thr Pro Glu Gly Gly
          100          105          110
Phe Asp Ala Ile Met Gln Ala Ala Val Cys Lys Glu Lys Ile Gly Trp
          115          120          125
Arg Asn Asp Ser Leu His Leu Leu Val Phe Val Ser Asp Ala Asp Ser
          130          135          140
His Phe Gly Met Asp Ser Lys Leu Ala Gly Ile Val Ile Pro Asn Asp
          145          150          155          160
Gly Leu Cys His Leu Asp Ser Lys Asn Glu Tyr Ser Met Ser Thr Val
          165          170          175
Leu Glu Tyr Pro Thr Ile Gly Gln Leu Ile Asp Lys Leu Val Gln Asn
          180          185          190
Asn Val Leu Leu Ile Phe Ala Val Thr Gln Glu Gln Val His Leu Tyr
          195          200          205
Glu Asn Tyr Ala Lys Leu Ile Pro Gly Ala Thr Val Gly Leu Leu Gln
          210          215          220
Lys Asp Ser Gly Asn Ile Leu Gln Leu Ile Ile Ser Ala Tyr Glu Glu
          225          230          235          240
Leu Arg Ser

```

<210> 13

<211> 240

<212> PRT

<213> Homo sapiens

<400> 13

```

Tyr Pro Ile Asp Leu Tyr Tyr Leu Met Asp Leu Ser Tyr Ser Met Lys
 1          5          10          15
Asp Asp Leu Glu Asn Val Lys Ser Leu Gly Thr Asp Leu Met Asn Glu
          20          25          30
Met Arg Arg Ile Thr Ser Asp Phe Arg Ile Gly Phe Gly Ser Phe Val
          35          40          45
Glu Lys Thr Val Met Pro Tyr Ile Ser Thr Thr Pro Ala Lys Leu Arg
          50          55          60
Asn Pro Cys Thr Ser Glu Gln Asn Cys Thr Thr Pro Phe Ser Tyr Lys
          65          70          75          80
Asn Val Leu Ser Leu Thr Asn Lys Gly Glu Val Phe Asn Glu Leu Val
          85          90          95
Gly Lys Gln Arg Ile Ser Gly Asn Leu Asp Ser Pro Glu Gly Gly Phe
          100          105          110
Asp Ala Ile Met Gln Val Ala Val Cys Gly Ser Leu Ile Gly Trp Arg
          115          120          125

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Asn Val Thr Arg Leu Leu Val Phe Ser Thr Asp Ala Gly Phe His Phe
 130                      135                      140
Ala Gly Asp Gly Lys Leu Gly Gly Ile Val Leu Pro Asn Asp Gly Gln
145                      150                      155                      160
Cys His Leu Glu Asn Asn Met Tyr Thr Met Ser His Tyr Tyr Asp Tyr
                      165                      170                      175
Pro Ser Ile Ala His Leu Val Gln Lys Leu Ser Glu Asn Asn Ile Gln
                      180                      185                      190
Thr Ile Phe Ala Val Thr Glu Glu Phe Gln Pro Val Tyr Lys Glu Leu
                      195                      200                      205
Lys Asn Leu Ile Pro Lys Ser Ala Val Gly Thr Leu Ser Ala Asn Ser
210                      215                      220
Ser Asn Val Ile Gln Leu Ile Ile Asp Ala Tyr Asn Ser Leu Ser Ser
225                      230                      235                      240

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<210> 14
<211> 241
<212> PRT
<213> Homo sapiens

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```

<400> 14
Tyr Pro Ile Asp Leu Tyr Tyr Leu Met Asp Leu Ser Tyr Ser Met Leu
 1                      5                      10                      15
Asp Asp Leu Arg Asn Val Lys Lys Leu Gly Gly Asp Leu Leu Arg Ala
                      20                      25                      30
Leu Asn Glu Ile Thr Glu Ser Gly Arg Ile Gly Phe Gly Ser Phe Val
                      35                      40                      45
Asp Lys Thr Val Leu Pro Phe Val Asn Thr His Pro Asp Lys Leu Arg
50                      55                      60
Asn Pro Cys Pro Asn Lys Glu Lys Glu Cys Gln Pro Pro Phe Ala Phe
65                      70                      75                      80
Arg His Val Leu Lys Leu Thr Asn Asn Ser Asn Gln Phe Gln Thr Glu
                      85                      90                      95
Val Gly Lys Gln Leu Ile Ser Gly Asn Leu Asp Ala Pro Glu Gly Gly
100                      105                      110
Leu Asp Ala Met Met Gln Val Ala Ala Cys Pro Glu Glu Ile Gly Trp
115                      120                      125
Arg Asn Val Thr Arg Leu Leu Val Phe Ala Thr Asp Asp Gly Phe His
130                      135                      140
Phe Ala Gly Asp Gly Lys Leu Gly Ala Ile Leu Thr Pro Asn Asp Gly
145                      150                      155                      160
Arg Cys His Leu Glu Asp Asn Leu Tyr Lys Arg Ser Asn Glu Phe Asp
                      165                      170                      175
Tyr Pro Ser Val Gly Gln Leu Ala His Lys Leu Ala Glu Asn Asn Ile
180                      185                      190
Gln Pro Ile Phe Ala Val Thr Ser Arg Met Val Lys Thr Tyr Glu Lys
195                      200                      205
Leu Thr Glu Ile Ile Pro Lys Ser Ala Val Gly Glu Leu Ser Glu Asp
210                      215                      220
Ser Ser Asn Val Val Gln Leu Ile Lys Asn Ala Tyr Asn Lys Leu Ser
225                      230                      235                      240
Ser

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```

<210> 15
<211> 242

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<212> PRT
 <213> Homo sapiens

<400> 15

```

Tyr Pro Val Asp Leu Tyr Tyr Leu Met Asp Leu Ser Tyr Ser Met Lys
 1           5           10           15
Asp Asp Leu Glu Arg Val Arg Gln Leu Gly His Ala Leu Leu Val Arg
      20           25           30
Leu Gln Glu Val Thr His Ser Val Arg Ile Gly Phe Gly Ser Phe Val
      35           40           45
Asp Lys Thr Val Leu Pro Phe Val Ser Thr Val Pro Ser Lys Leu Arg
      50           55           60
His Pro Cys Pro Thr Arg Leu Glu Arg Cys Gln Ser Pro Phe Ser Phe
      65           70           75           80
His His Val Leu Ser Leu Thr Gly Asp Ala Gln Ala Phe Glu Arg Glu
      85           90           95
Val Gly Arg Gln Ser Val Ser Gly Asn Leu Asp Ser Pro Glu Gly Gly
      100          105          110
Phe Asp Ala Ile Leu Gln Ala Ala Leu Cys Gln Glu Gln Ile Gly Trp
      115          120          125
Arg Asn Val Ser Arg Leu Leu Val Phe Thr Ser Asp Asp Thr Phe His
      130          135          140
Thr Ala Gly Asp Gly Lys Leu Gly Gly Ile Phe Met Pro Ser Asp Gly
      145          150          155          160
His Cys His Leu Asp Ser Asn Gly Leu Tyr Ser Arg Ser Thr Glu Phe
      165          170          175
Asp Tyr Pro Ser Val Gly Gln Val Ala Gln Ala Leu Ser Ala Ala Asn
      180          185          190
Ile Gln Pro Ile Phe Ala Val Thr Ser Ala Ala Leu Pro Val Tyr Gln
      195          200          205
Glu Leu Ser Lys Leu Ile Pro Lys Ser Ala Val Gly Glu Leu Ser Glu
      210          215          220
Asp Ser Ser Asn Val Val Gln Leu Ile Met Asp Ala Tyr Asn Ser Leu
      225          230          235          240
Ser Ser

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<210> 16
 <211> 242
 <212> PRT
 <213> Homo sapiens

<400> 16

```

Tyr Pro Val Asp Leu Tyr Tyr Leu Val Asp Val Ser Ala Ser Met His
 1           5           10           15
Asn Asn Ile Glu Lys Leu Asn Ser Val Gly Asn Asp Leu Ser Arg Lys
      20           25           30
Met Ala Phe Phe Ser Arg Asp Phe Arg Leu Gly Phe Gly Ser Tyr Val
      35           40           45
Asp Lys Thr Val Ser Pro Tyr Ile Ser Ile His Pro Glu Arg Ile His
      50           55           60
Asn Gln Cys Ser Asp Tyr Asn Leu Asp Cys Met Pro Pro His Gly Tyr
      65           70           75           80
Ile His Val Leu Ser Leu Thr Glu Asn Ile Thr Glu Phe Glu Lys Ala
      85           90           95
Val His Arg Gln Lys Ile Ser Gly Asn Ile Asp Thr Pro Glu Gly Gly
      100          105          110

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[illegible]

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<210> 17
<211> 241
<212> PRT
<213> Homo sapiens
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[illegible]

<210> 18
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> mutagenic primer

<400> 18
tataggatcc gaggccctcc gagggagtcc tcaagaggat ag 42

<210> 19
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> mutagenic primer

<400> 19
ctactcgagt tacttctccc gaagctgggt ctgaatggtc 40

<210> 20
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> mutagenic primer

<400> 20
ctactcgagt taaccctcga tcgcaaagcc cttctc 36